VII. WHAT IS CLAIMED IS:

1. An upgradeable and extendable wireless communication system, comprising:

a plurality of layers, each layer including:

a plurality of configurable computational units capable of implementing operation of wireless digital communication functions;

a plurality of data flow components for forming paths between ones of said computational units and having means for storing data; and

a plurality of control flow components for forming a signaling-exchange network between ones of said computational units.

2. The wireless communication system of claim 1 further including means for at least one layer of said plurality of layers to communicate with at least another layer of said plurality of layers.

3. The wireless communication system of claim 1, wherein the plurality of configurable computational units comprise a RF front-end waveform kernel set, a re-configurable kernel set and a reprogrammable kernel set.

4. The wireless communication system of claim 1, wherein the plurality of data flow components comprise a layer-memory structure and a layer-router structure.

5. The wireless communication system of claim 1, wherein the plurality of control flow components comprise a layer-memory structure and a layer-bus structure.

6. A method of programming and configuring components of an upgradeable and extendable wireless communication system in order to implement multiple wireless communication standards, services, and applications, comprising:

identifying one of the application, standard or service to be implemented;

compiling software associated with the identified application, standard or service;

determining the utilization of hardware resources; and

configuring hardware resources to meet the application, standard or service required.